



# **Excess Spoil Disposal Configuration**

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# Why no water on backfill?

- High permeability of backfill
- Broken and mixed overburden from blasting and excavation
- Backfill has no defined horizons
- Change to pre-mining stratigraphy
- No aquicludes until pavement
- Infiltration from ditches

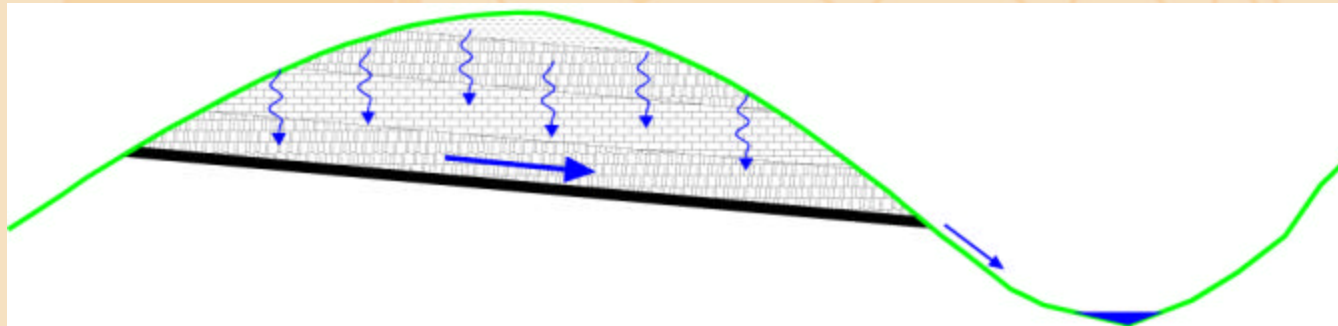


# Where is water?

- Storm flow in ditches
- Subsurface flow on coal pavement
- Subsurface flow discharge at down dip outcrop
- Some outcrop discharges covered by valley fill
- Discharge at toe of valley fill
- Very few surface flows
- Some ponds on solid benches



# Subsurface Flow



# Subsurface Flow (with fill)



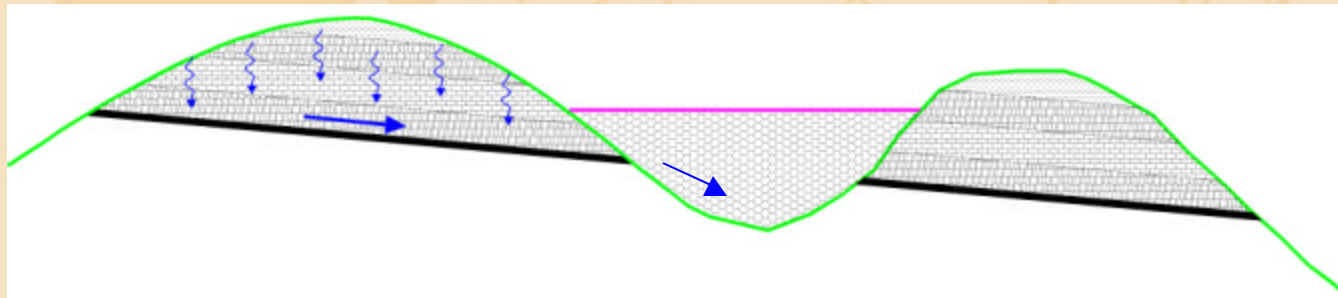
# Alternative Backfill Configuration?

- Objectives
  - Intercept groundwater discharge
  - Decrease ditch gradients
- Alternative Configuration
  - Construct combination conventional / side-hill fill
  - Tilt top surface of valley fills to one side
  - Create incised groin ditch with flatter slope

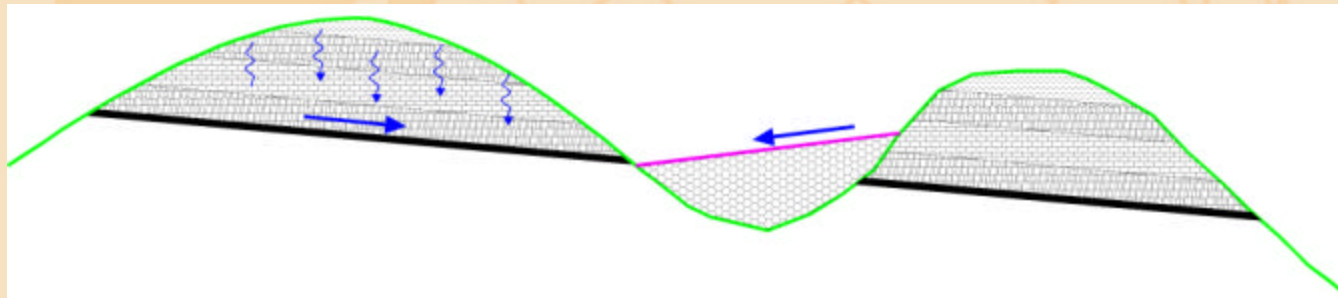




# Typical Valley Fill Regrade



# Modified Valley Fill Regrade





# Evaluation of skewed fill

- Advantages
  - Intercepts flow at outcrop
  - Collects some surface flow
  - Increases probability of perennial flow
- Disadvantages
  - Increased flow rate in single ditch
  - Concerns with regulatory stipulations for side hill fill
  - Some increase in fill haulage height



# AOC Model

- Provides an objective and reproducible means to define AOC
- Allows a subjective approach to be replaced with a volumetric definition
- Optimizes the placement of spoil
- Volumetric approach gives operator flexibility over final design
- Allows landforming, stream restoration and aquatic habitat projects

